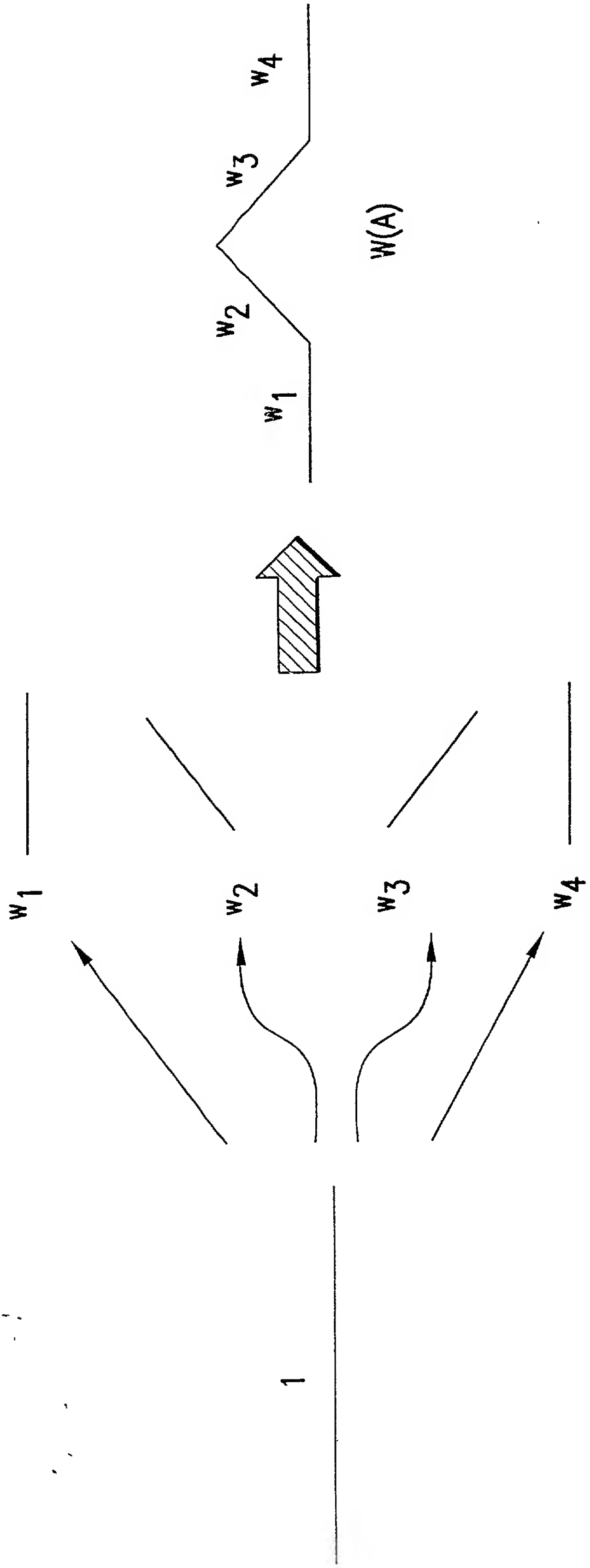


FIG.1

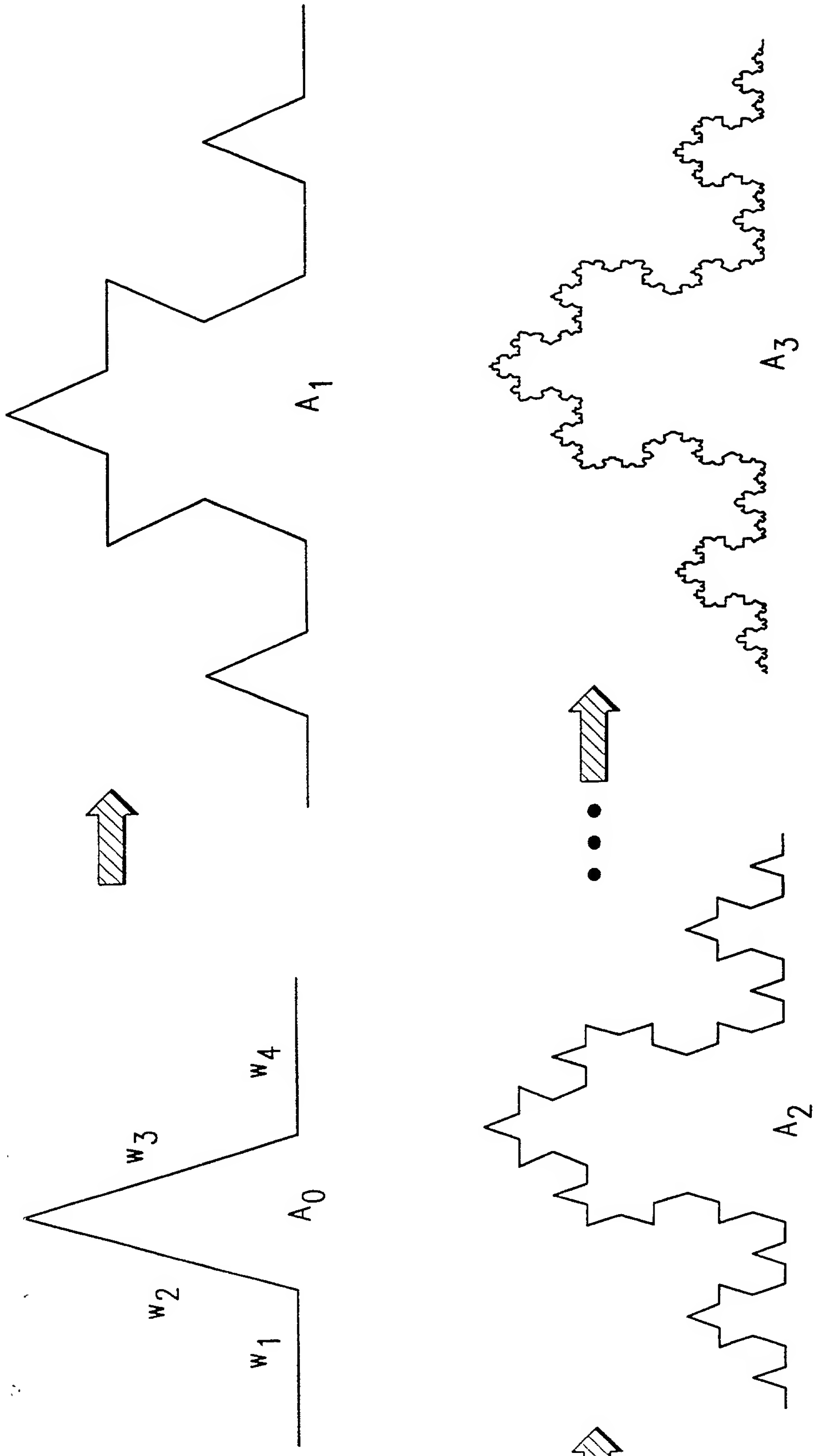


FIG.2

a	b	c	d	e	f
0.255	0.0	0.0	0.255	0.3726	0.6714
0.255	0.0	0.0	0.255	0.1146	0.2232
0.255	0.0	0.0	0.255	0.6306	0.2232
0.370	−0.642	0.642	0.370	0.6356	−0.0061

FIG.3

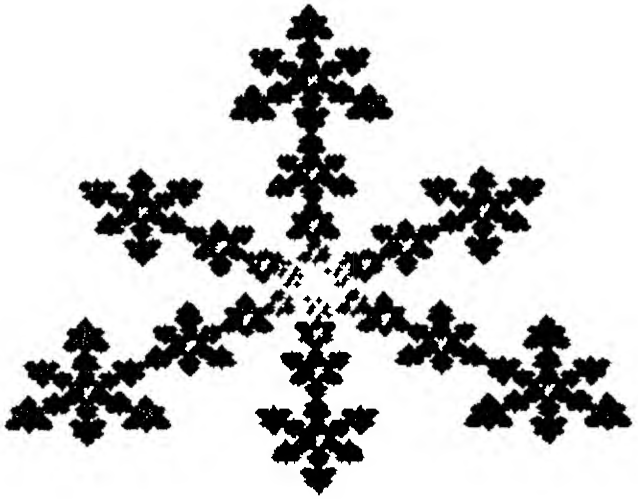


FIG.3A

a	b	c	d	e	f
0.195	−0.488	0.344	0.443	0.4431	0.2452
0.462	0.414	−0.252	0.361	0.2511	0.5692
−0.058	−0.07	0.453	−0.111	0.5976	0.0969
−0.035	0.07	−0.469	−0.022	0.4884	0.5069
−0.637	0.0	0.0	0.501	0.8562	0.2513

FIG.4

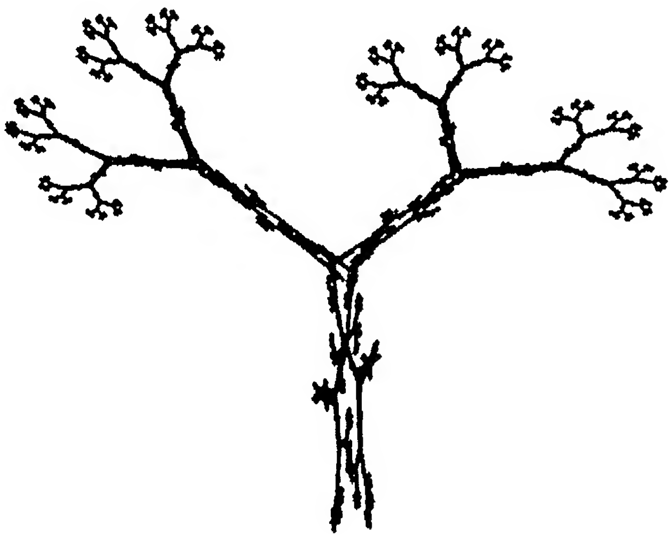


FIG.4A

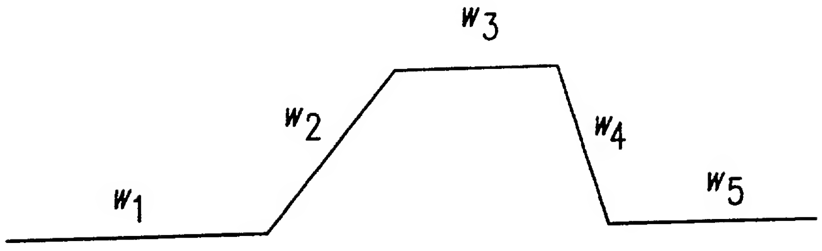


FIG.5

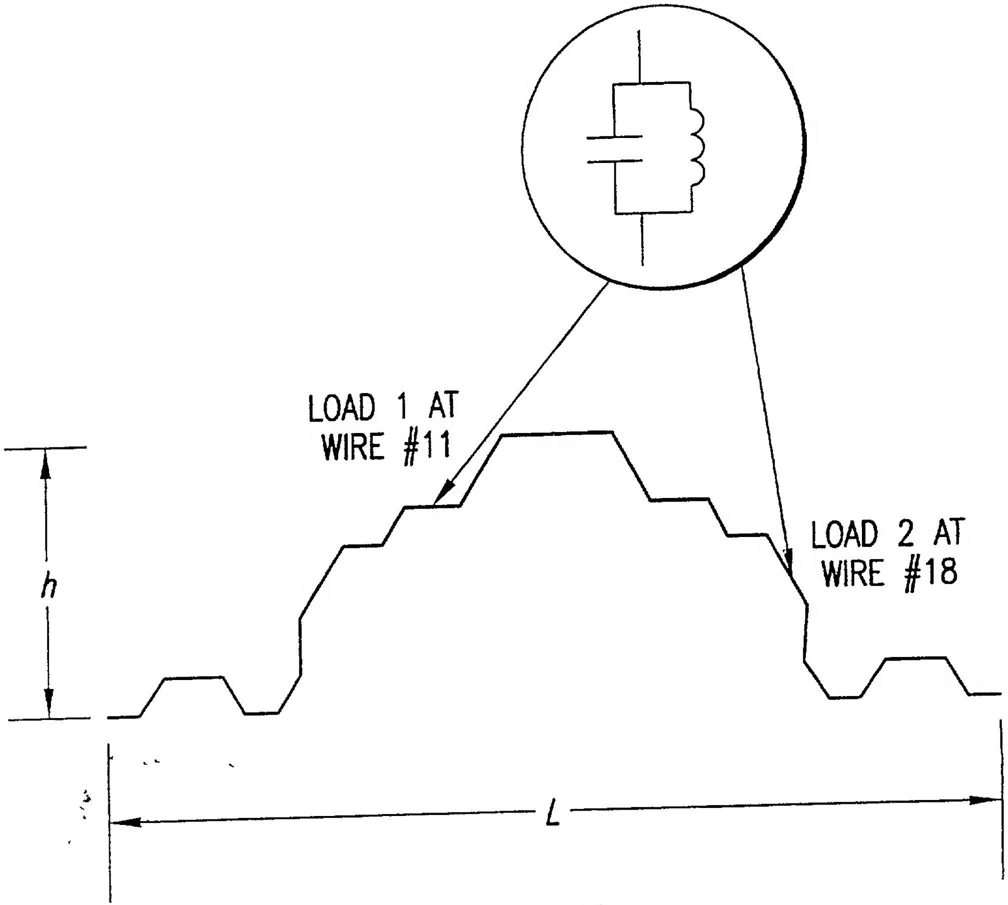


FIG.6

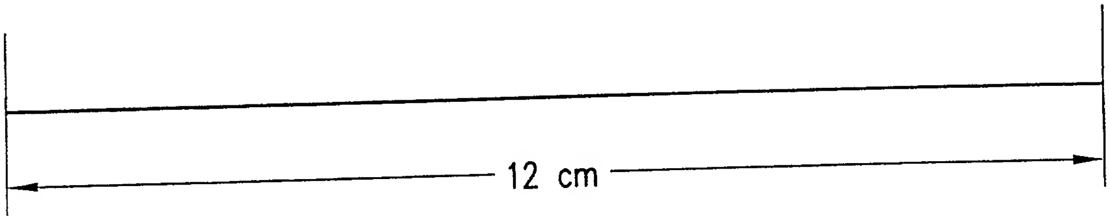


FIG.7

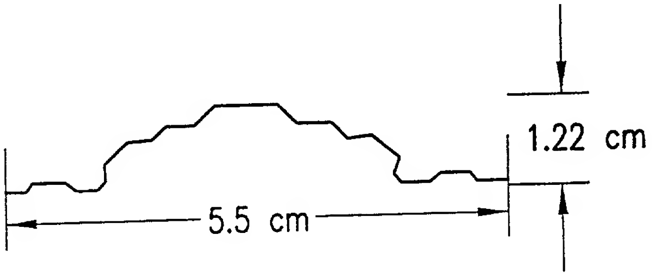


FIG.8

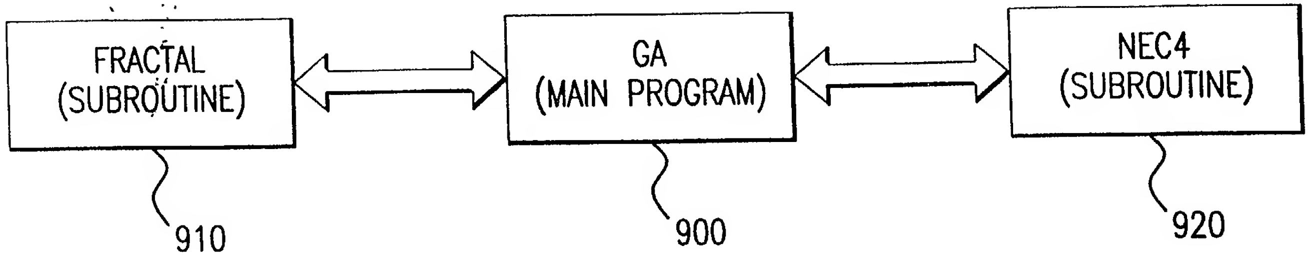

FRACTAL (SUBROUTINE)
GA (MAIN PROGRAM)
NEC4 (SUBROUTINE)
910
900
920

FIG.9

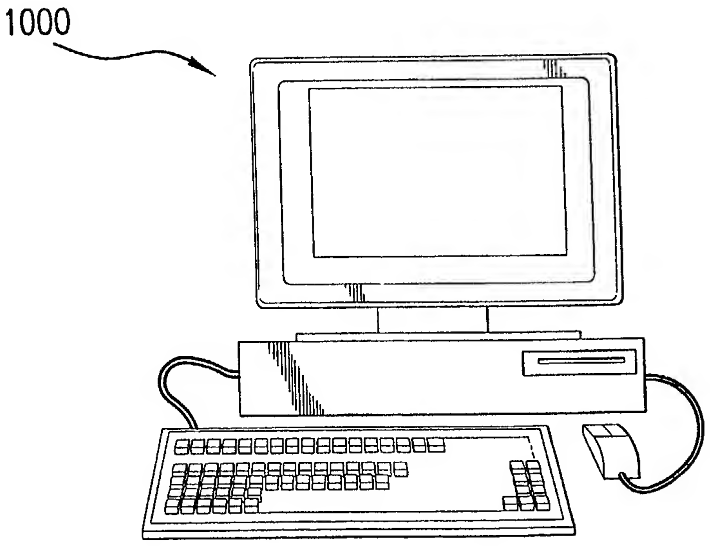

1000

FIG.10

LENGTH OF ANTENNA = 12 cm
LOAD LOCATIONS : LOAD1 ELEMENT 21 L1 = 15.81250 nH C1 = 0.4849 pF
LOAD2 ELEMENT 06 L2 = 17.98438 nH C2 = 0.7996 pF

FREQUENCY	VSWR
1225 MHz	1.3383
1575 MHz	1.2872

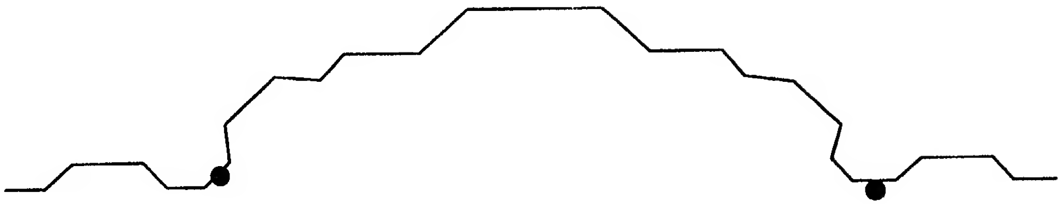


FIG.11

LENGTH OF ANTENNA = 11.5 cm
LOAD LOCATIONS : LOAD1 ELEMENT 21 L1 = 15.53125 nH C1 = 0.5376 pF
LOAD2 ELEMENT 06 L2 = 17.95312 nH C2 = 0.8453 pF

FREQUENCY	VSWR
1225 MHz	1.2649
1575 MHz	1.2266

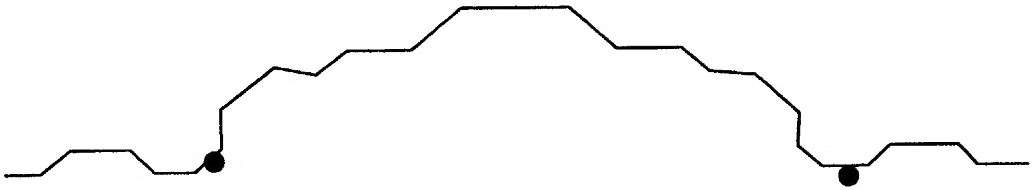


FIG.12

LENGTH OF ANTENNA = 11.0 cm
LOAD LOCATIONS : LOAD1 ELEMENT 05 L1 = 17.26562 nH C1 = 0.4708 pF
LOAD2 ELEMENT 04 L2 = 17.89062 nH C2 = 0.9648 pF

FREQUENCY	VSWR
1225 MHz	1.0738
1575 MHz	1.3285

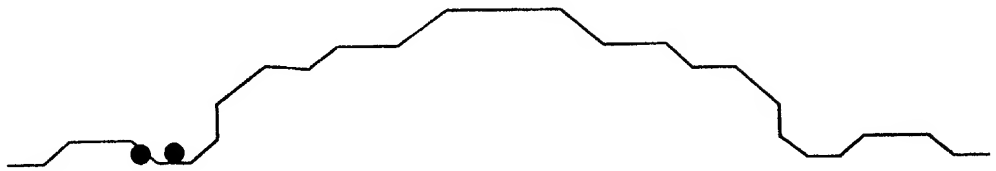


FIG.13

LENGTH OF ANTENNA = 10.5 cm
LOAD LOCATIONS : LOAD1 ELEMENT 22 L1 = 13.93750 nH C1 = 0.6414 pF
LOAD2 ELEMENT 04 L2 = 18.92188 nH C2 = 0.9050 pF

FREQUENCY	VSWR
1225 MHz	1.1249
1575 MHz	1.1205

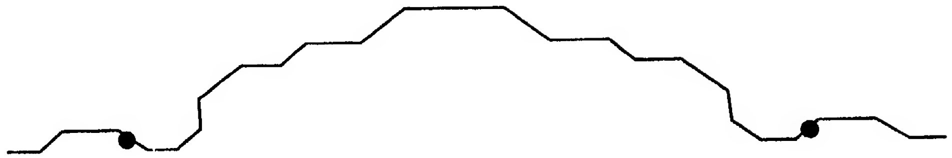


FIG.14

LENGTH OF ANTENNA = 10.0 cm
LOAD LOCATIONS : LOAD1 ELEMENT 25 L1 = 15.98438 nH C1 = 0.5746 pF
LOAD2 ELEMENT 23 L2 = 13.39062 nH C2 = 0.6712 pF

FREQUENCY	VSWR
1225 MHz	1.1884
1575 MHz	1.1103

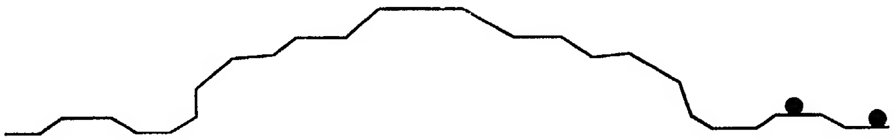


FIG.15

LENGTH OF ANTENNA = 9.5 cm
LOAD LOCATIONS : LOAD1 ELEMENT 22 L1 = 13.48438 nH C1 = 0.6941 pF
LOAD2 ELEMENT 25 L2 = 12.09375 nH C2 = 0.1509 pF

FREQUENCY	VSWR
1225 MHz	1.0386
1575 MHz	1.1186

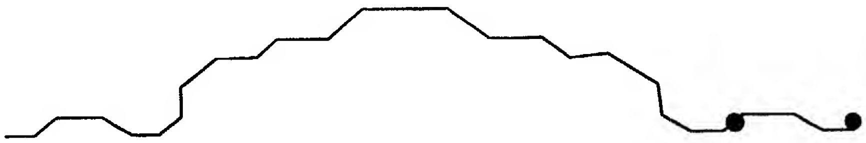


FIG.16

LENGTH OF ANTENNA = 9.0 cm
LOAD LOCATIONS : LOAD1 ELEMENT 25 L1 = 12.04688 nH C1 = 0.3302 pF
LOAD2 ELEMENT 05 L2 = 15.43750 nH C2 = 0.6642 pF

FREQUENCY	VSWR
1225 MHz	1.0392
1575 MHz	1.1430

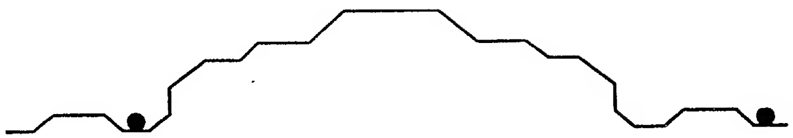


FIG.17

LENGTH OF ANTENNA = 8.5 cm
LOAD LOCATIONS : LOAD1 ELEMENT 25 L1 = 18.79688 nH C1 = 0.5570 pF
LOAD2 ELEMENT 09 L2 = 15.43750 nH C2 = 0.6853 pF

FREQUENCY	VSWR
1225 MHz	1.1235
1575 MHz	1.0224

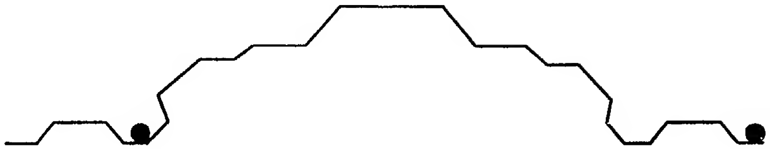


FIG.18

LENGTH OF ANTENNA = 8.0 cm
LOAD LOCATIONS : LOAD1 ELEMENT 04 L1 = 13.42188 nH C1 = 0.1457 pF
LOAD2 ELEMENT 04 L2 = 16.15625 nH C2 = 0.7644 pF

FREQUENCY	VSWR
1225 MHz	1.1432
1575 MHz	1.0470

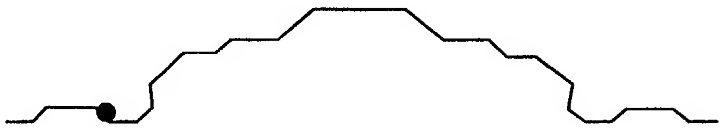


FIG.19

LENGTH OF ANTENNA = 7.5 cm
LOAD LOCATIONS : LOAD1 ELEMENT 04 L1 = 13.50000 nH C1 = 0.3671 pF
LOAD2 ELEMENT 25 L2 = 18.35938 nH C2 = 0.8910 pF

FREQUENCY	VSWR
1225 MHz	1.0453
1575 MHz	1.1628

FIG.20

LENGTH OF ANTENNA = 7.0 cm
LOAD LOCATIONS : LOAD1 ELEMENT 23 L1 = 17.95312 nH C1 = 0.8119 pF
LOAD2 ELEMENT 19 L2 = 19.50000 nH C2 = 0.1017 pF

FREQUENCY	VSWR
1225 MHz	1.3338
1575 MHz	1.1024

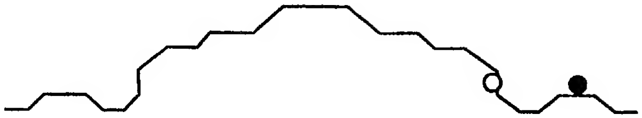


FIG.21

LENGTH OF ANTENNA = 6.5 cm
LOAD LOCATIONS : LOAD1 ELEMENT 22 L1 = 16.10938 nH C1 = 0.8962 pF
LOAD2 ELEMENT 12 L2 = 13.01562 nH C2 = 0.2107 pF

FREQUENCY	VSWR
1225 MHz	1.6677
1575 MHz	1.4982

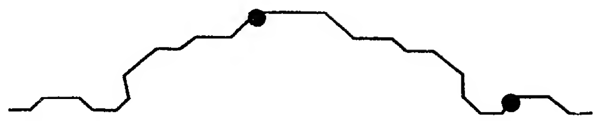


FIG.22

LENGTH OF ANTENNA = 6.0 cm
LOAD LOCATIONS : LOAD1 ELEMENT 22 L1 = 16.35938 nH C1 = 0.8962 pF
LOAD2 ELEMENT 09 L2 = 16.12500 nH C2 = 0.3214 pF

FREQUENCY	VSWR
1225 MHz	1.6956
1575 MHz	1.4979

FIG.23

LENGTH OF ANTENNA = 5.5 cm
LOAD LOCATIONS : LOAD1 ELEMENT 22 L1 = 15.86914 nH C1 = 0.9308 pF
LOAD2 ELEMENT 16 L2 = 12.51172 nH C2 = 0.5371 pF

FREQUENCY	VSWR
1225 MHz	1.9413
1575 MHz	1.7861

FIG.24

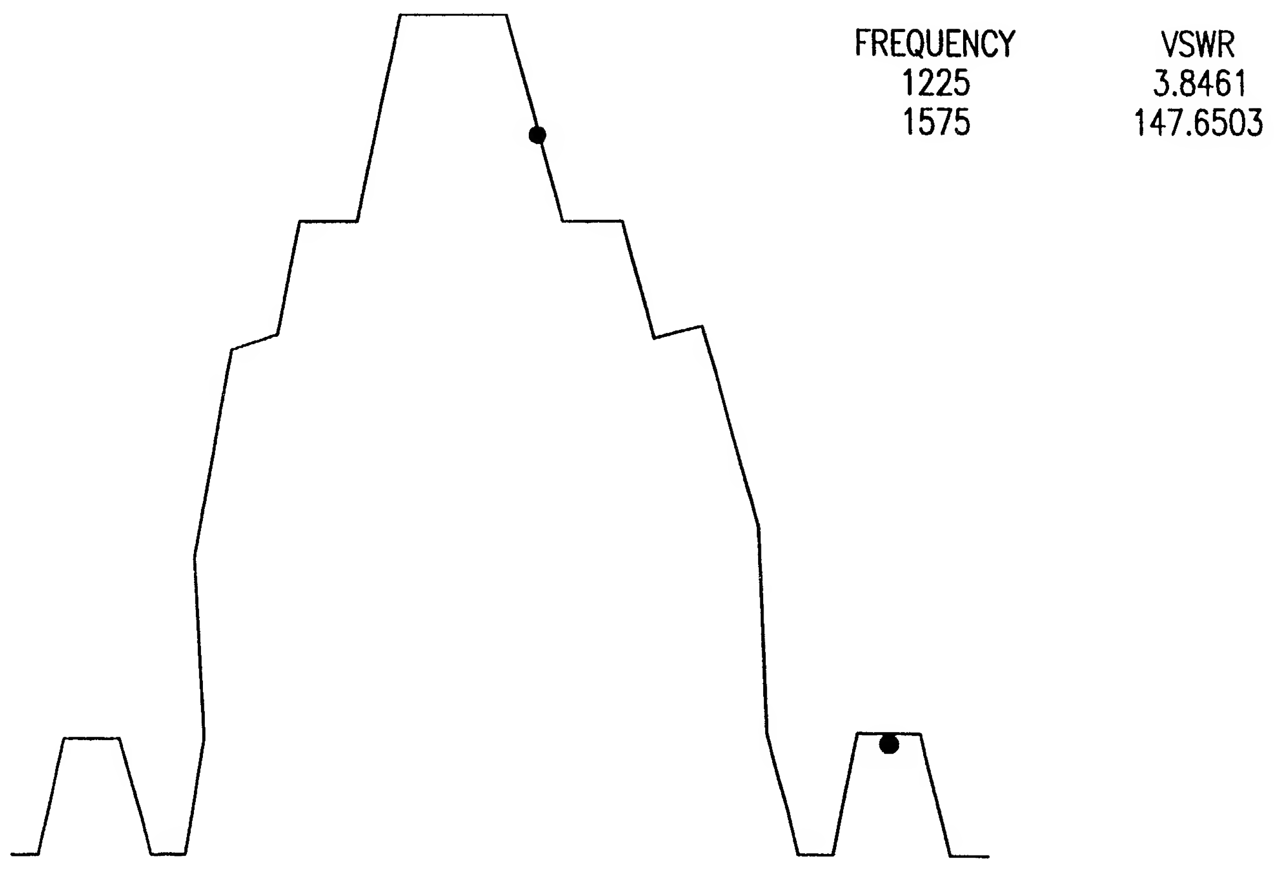


FIG.25

FREQUENCY	VSWR
1225	7.7811
1575	34.0082

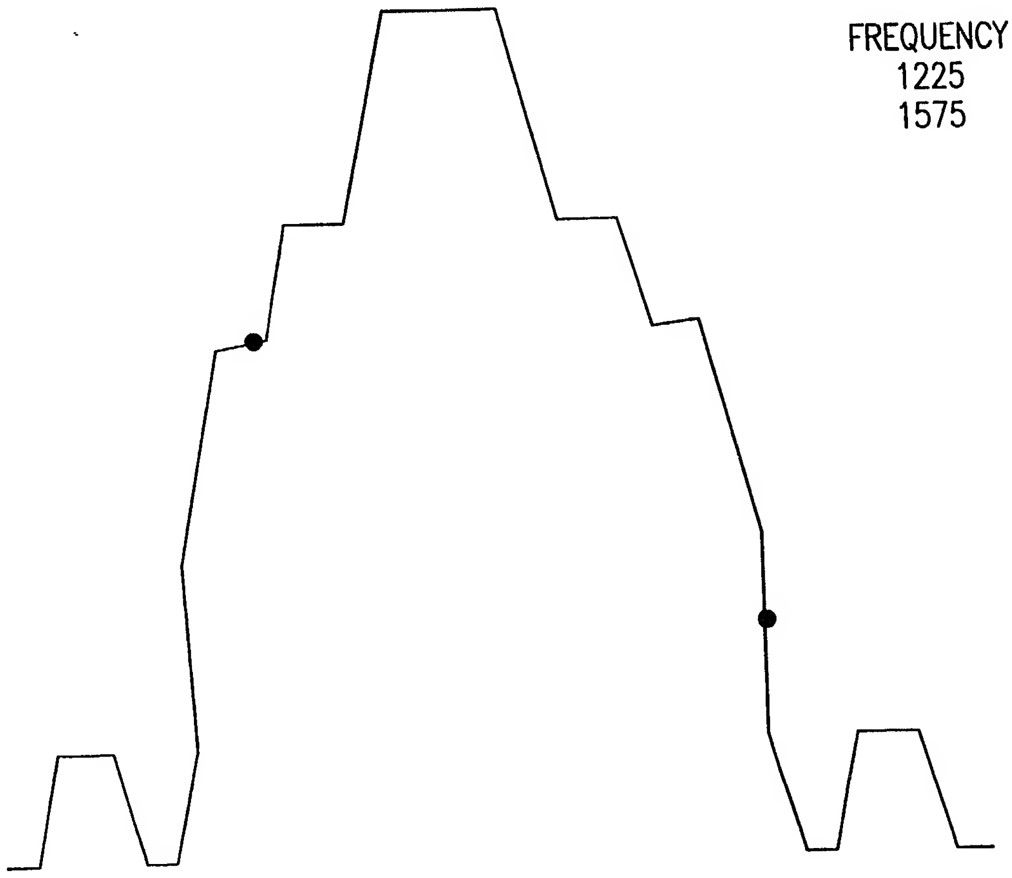


FIG.26

FREQUENCY	VSWR
1225	6.2696
1575	37.7545

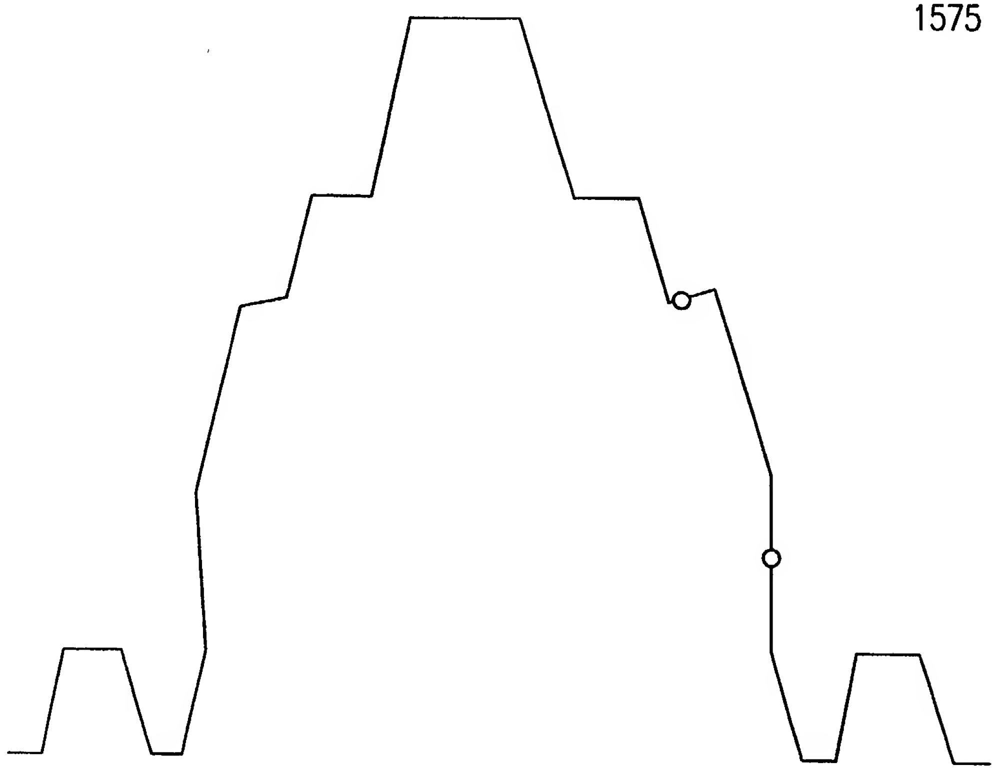


FIG.27

FREQUENCY	VSWR
1225	5.6053
1575	34.3092

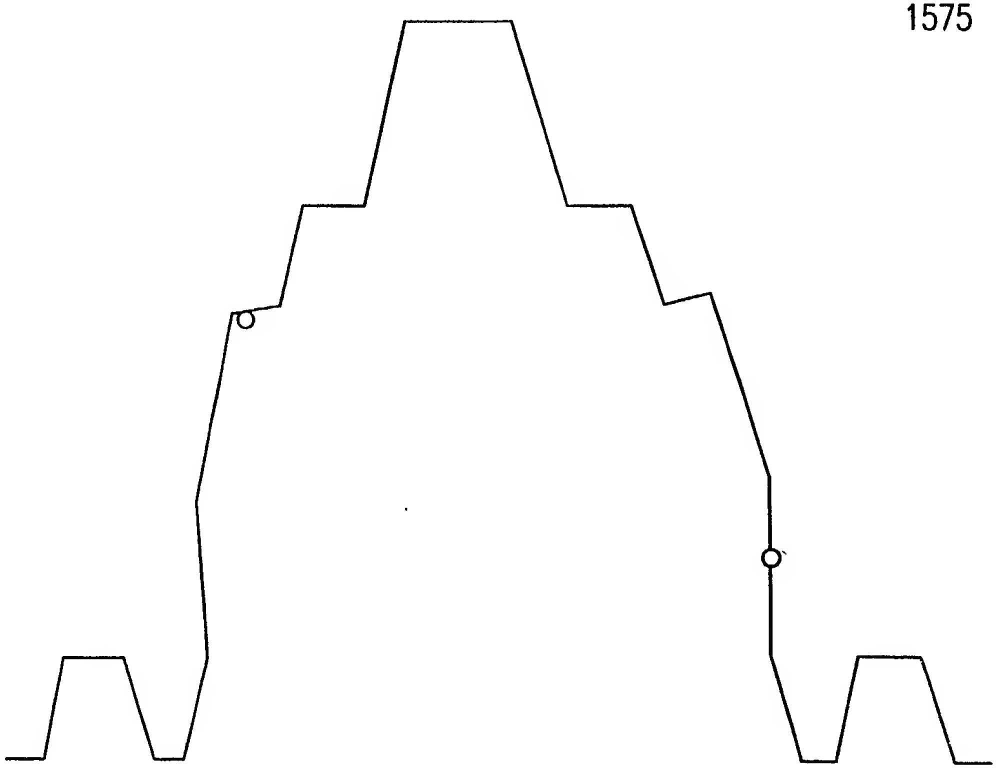


FIG.28

FREQUENCY	VSWR
1225	5.5536
1575	34.3092

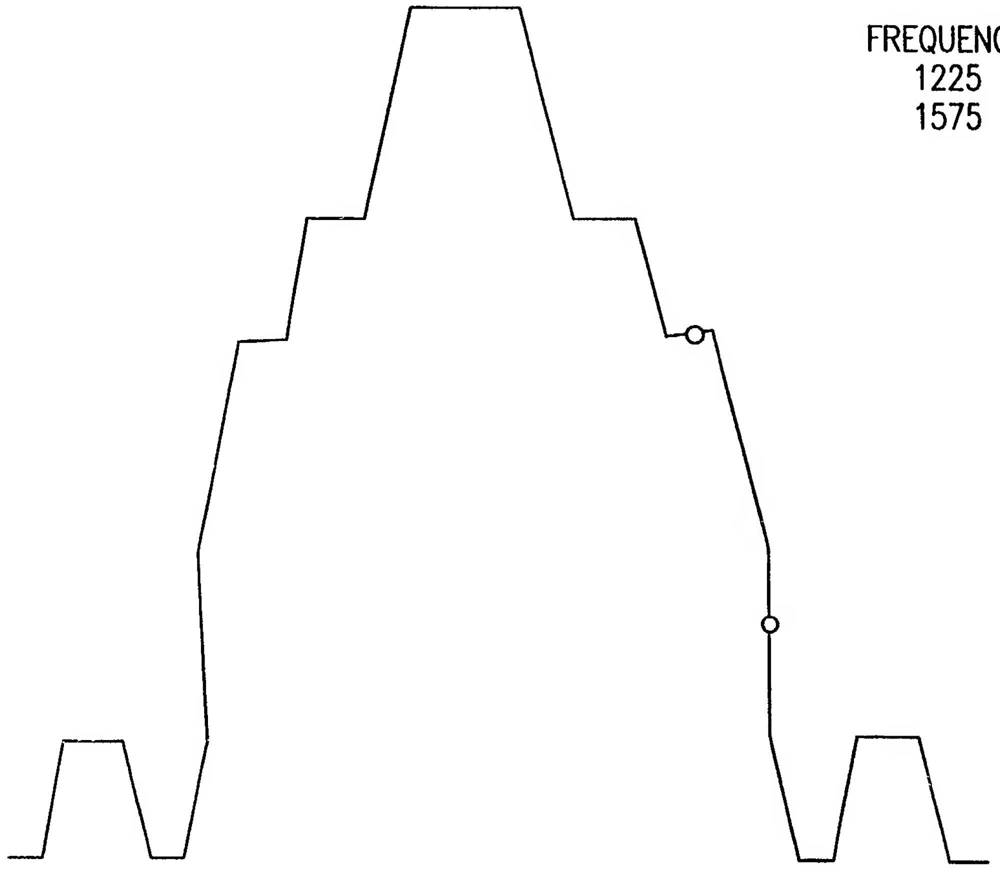


FIG.29

FREQUENCY	VSWR
1225	3.9846
1575	30.16798

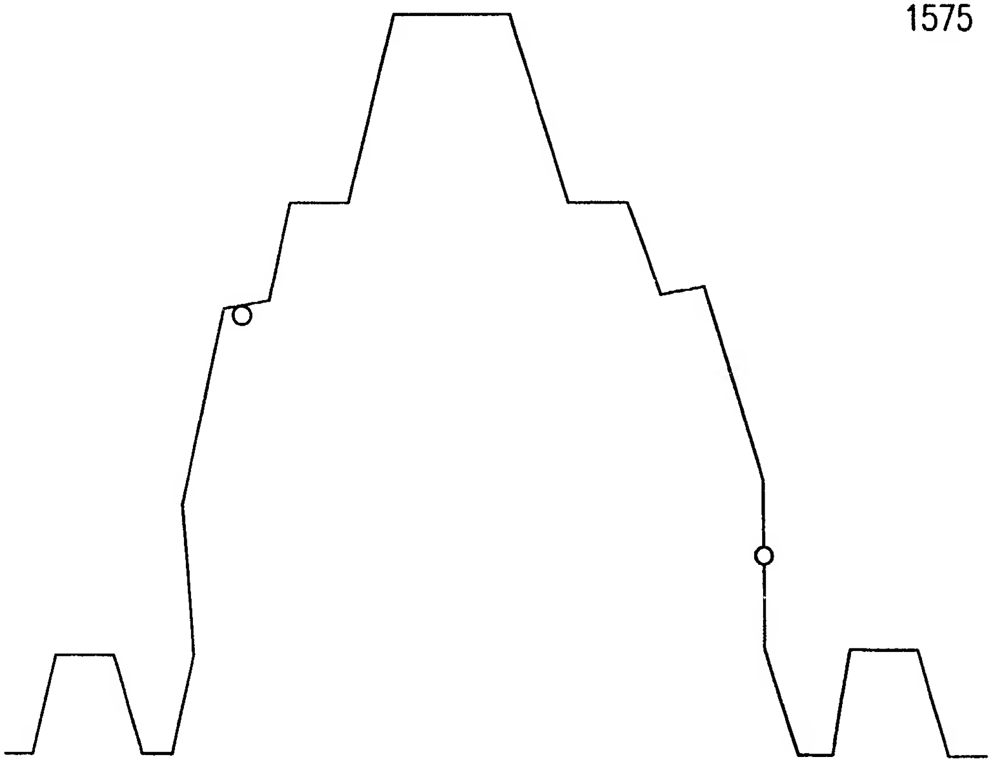


FIG.30

FREQUENCY	VSWR
1225	5.0477
1575	4.1741

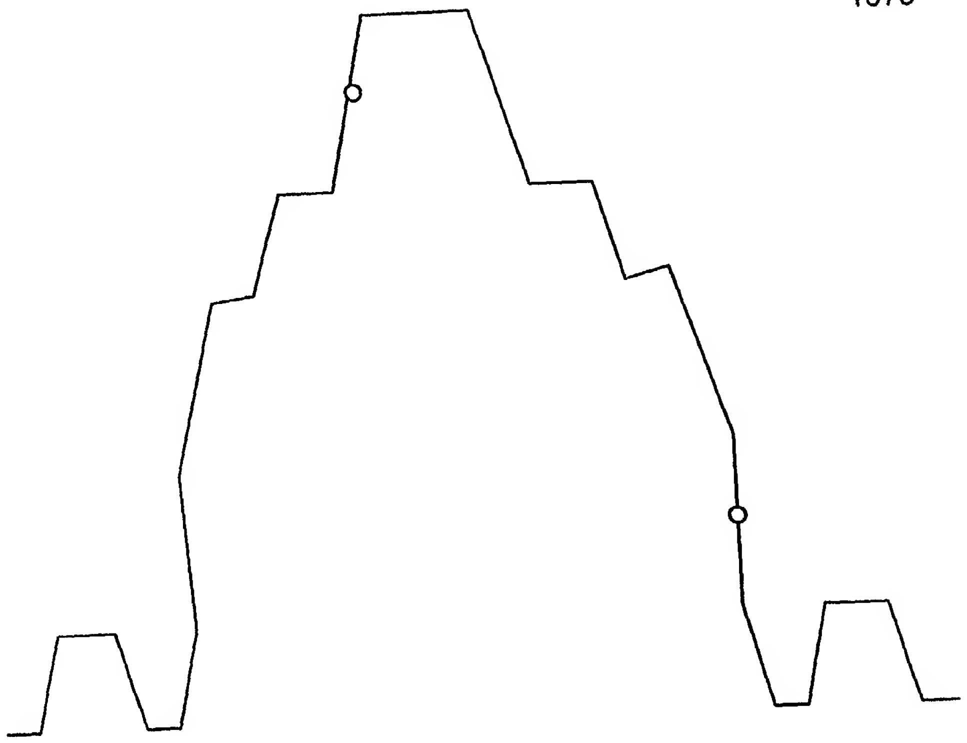


FIG.31

FREQUENCY	VSWR
1225	1.8738
1575	9.9798

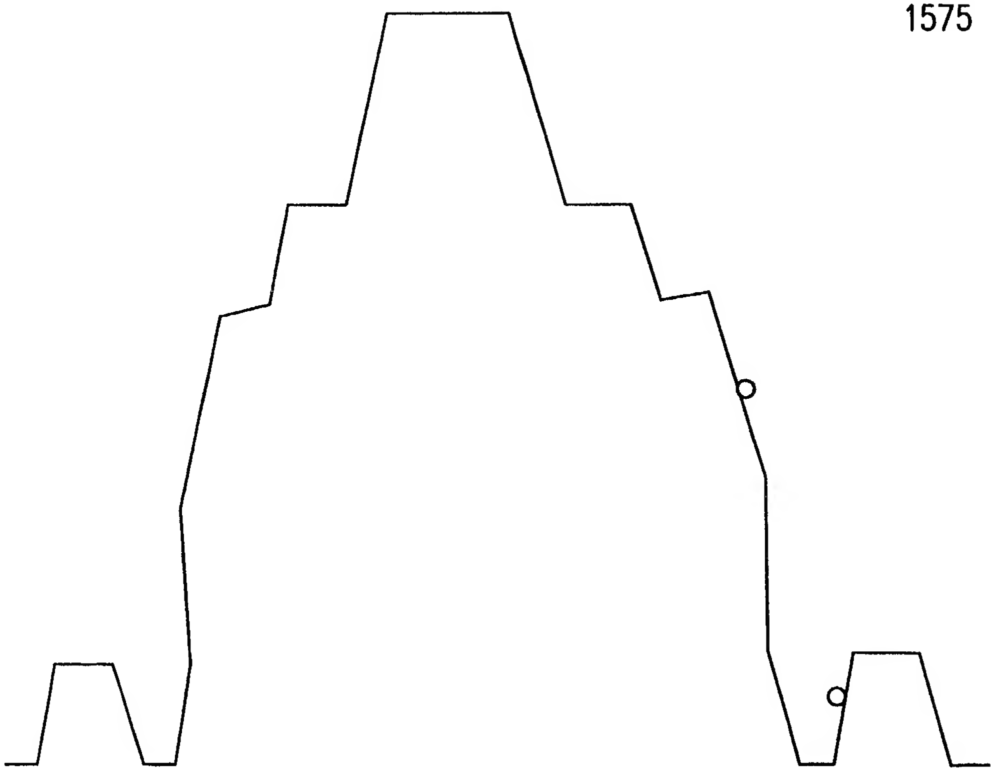


FIG.32

FREQUENCY	VSWR
1225	1.9631
1575	1.8005

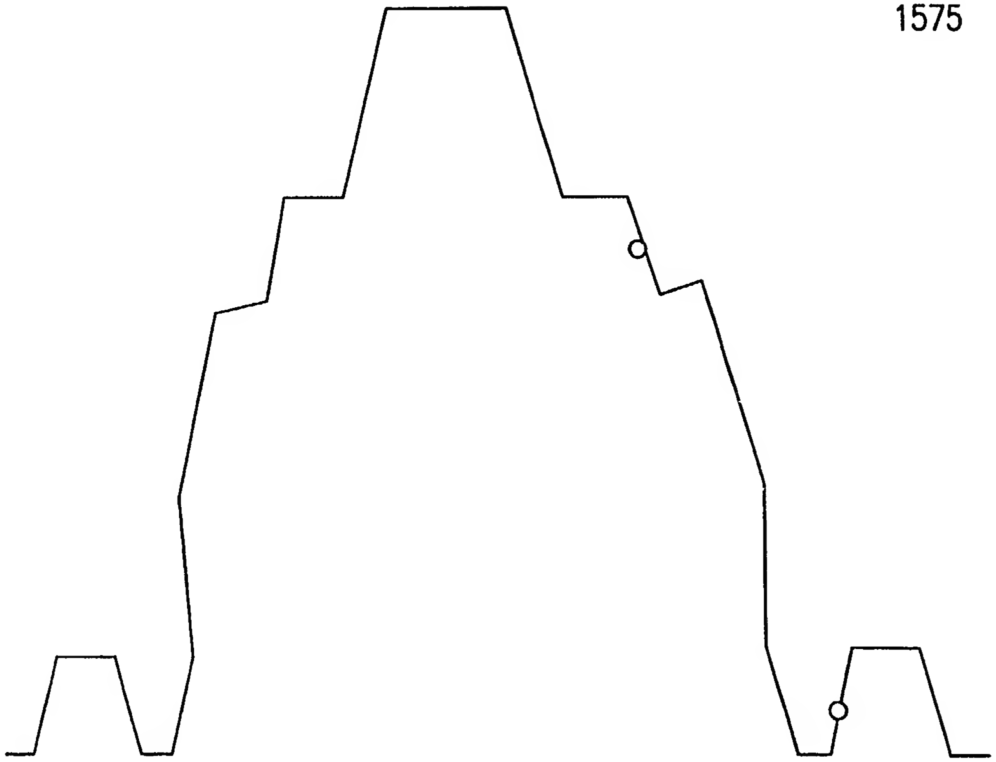


FIG.33

FREQUENCY	VSWR
1225	1.9578
1575	1.7579

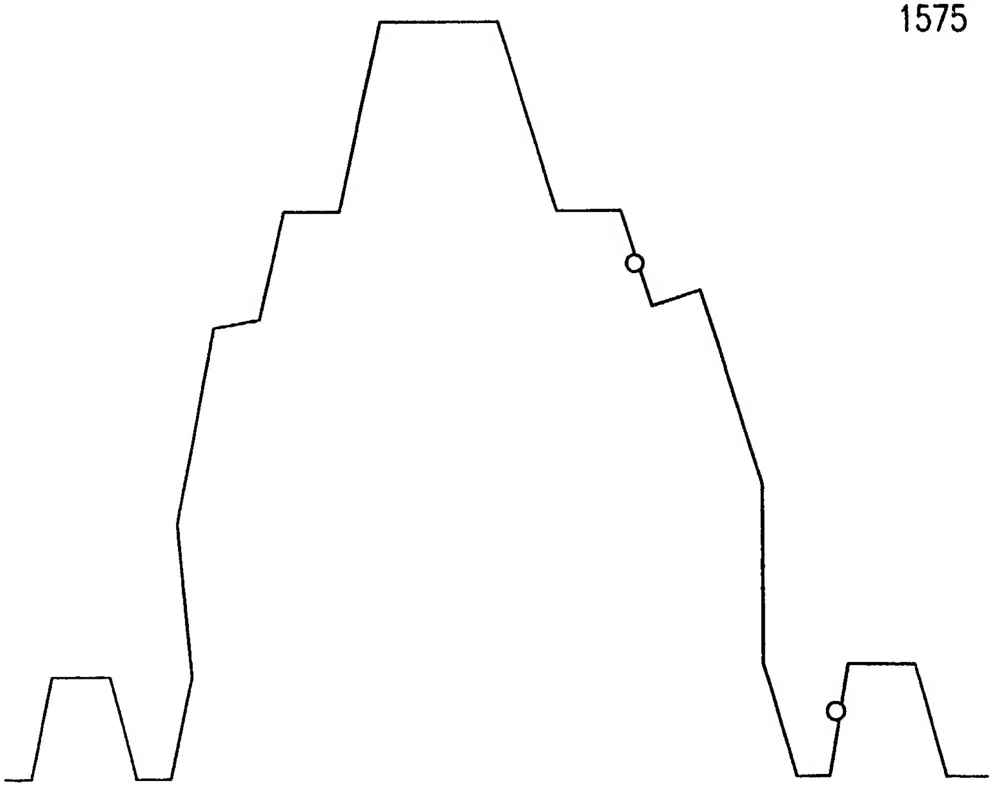
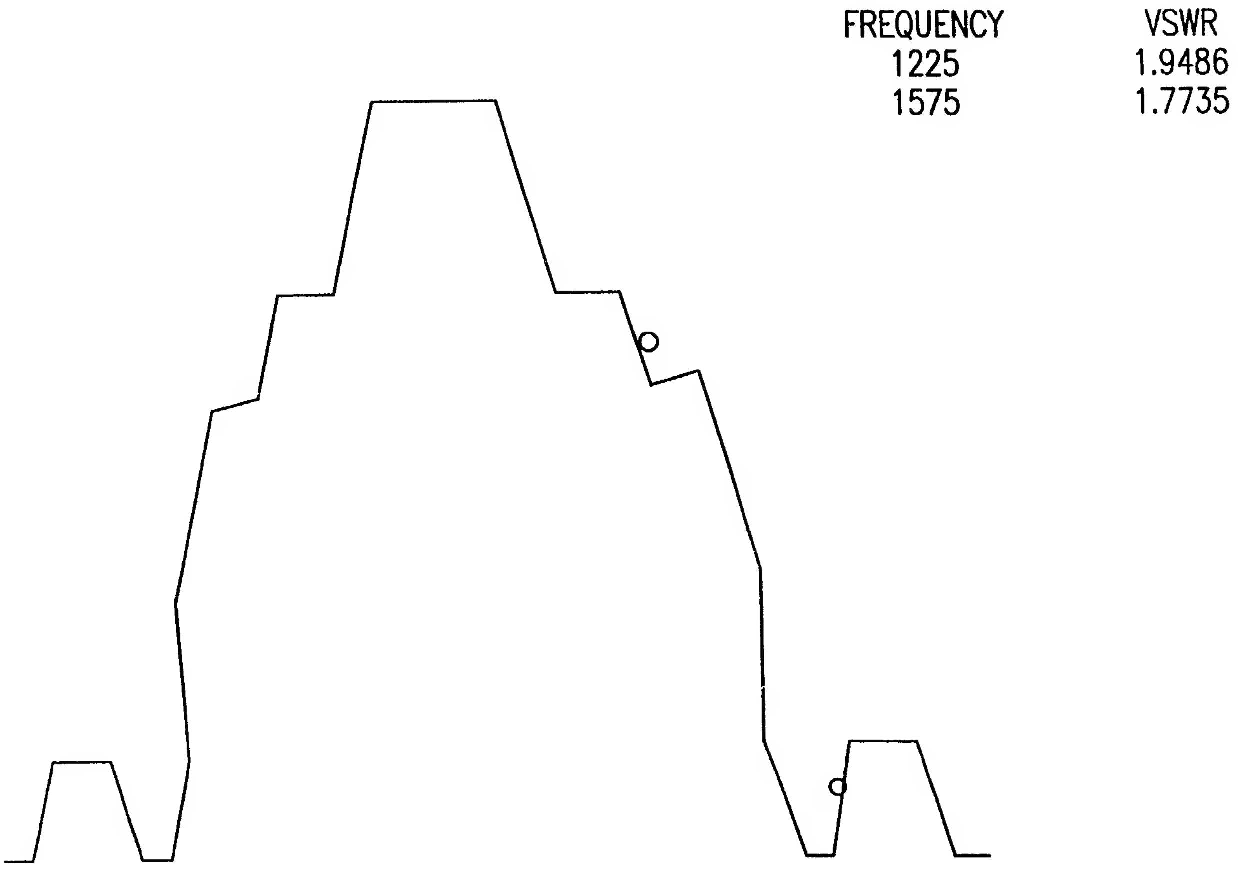


FIG.34



FREQUENCY	VSWR
1225	1.9486
1575	1.7735

FIG.35

FREQUENCY	VSWR
1225	1.9453
1575	1.7947

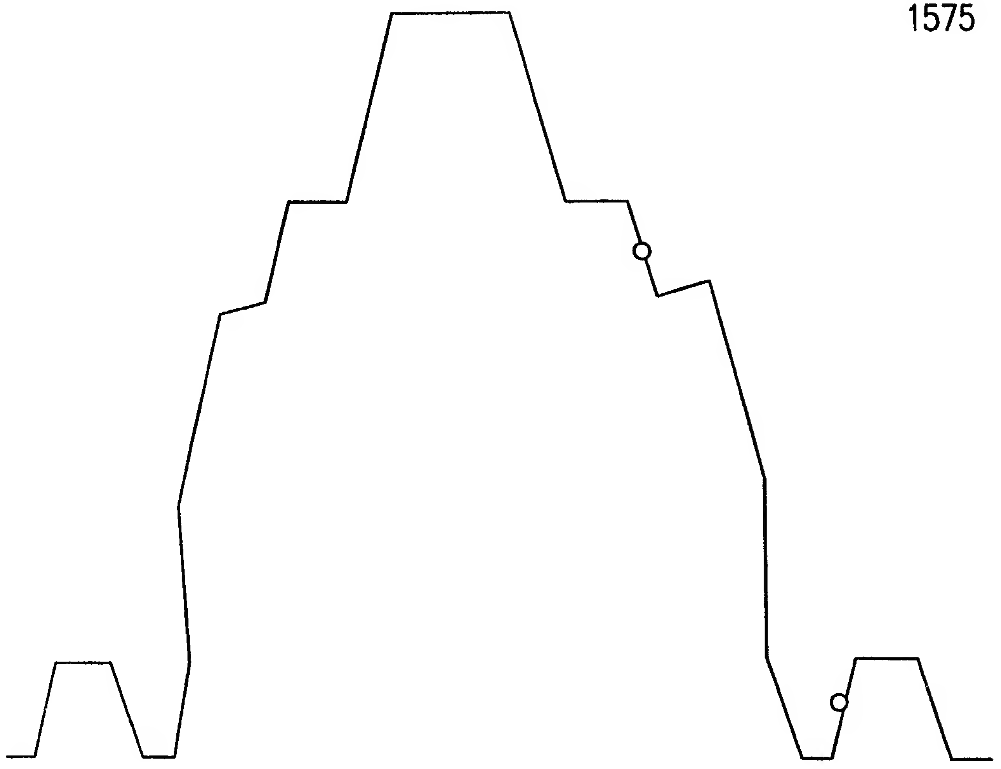


FIG.36

FREQUENCY	VSWR
1225	1.9415
1575	1.7904

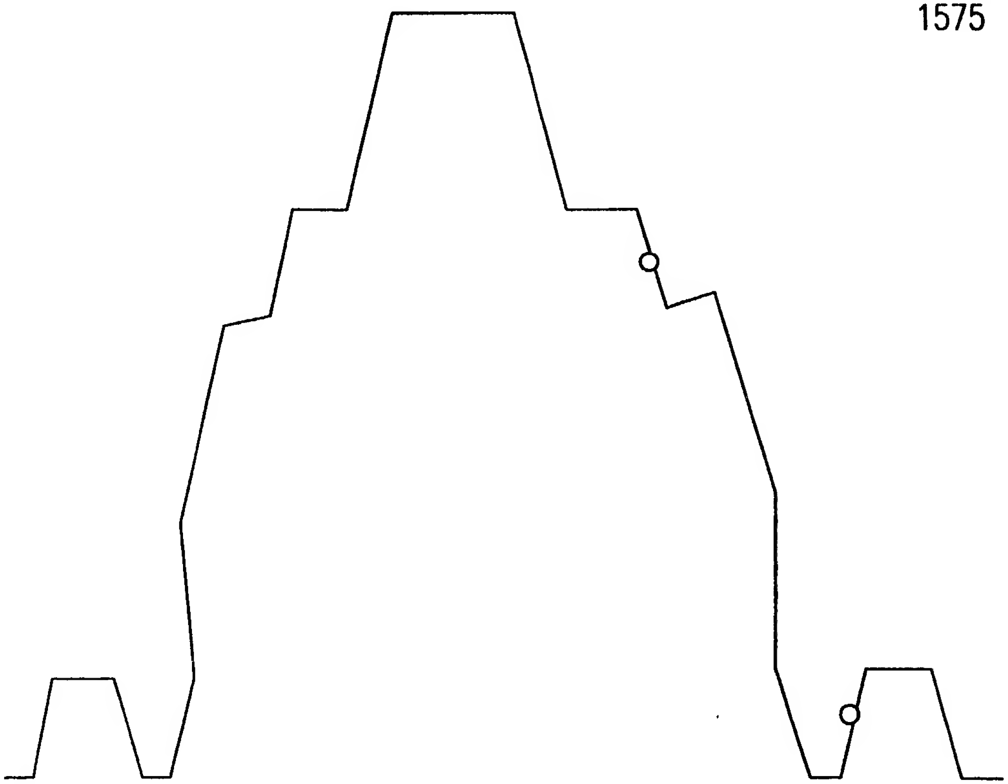


FIG.37

FREQUENCY	VSWR
1225	1.9413
1575	1.7861

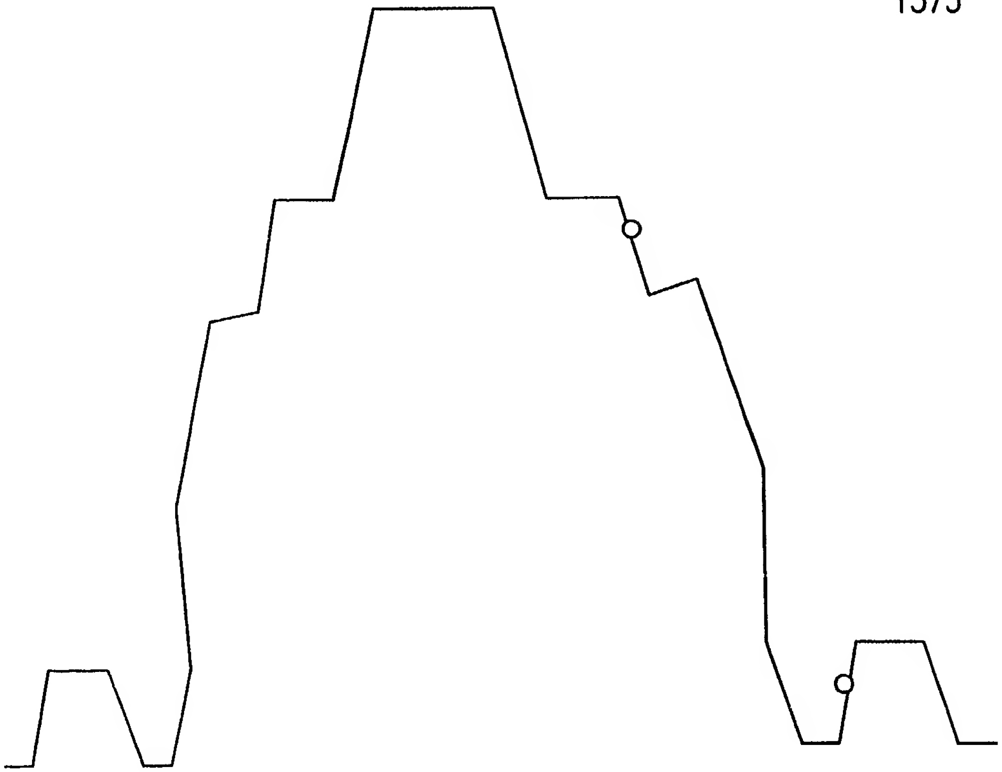


FIG.38

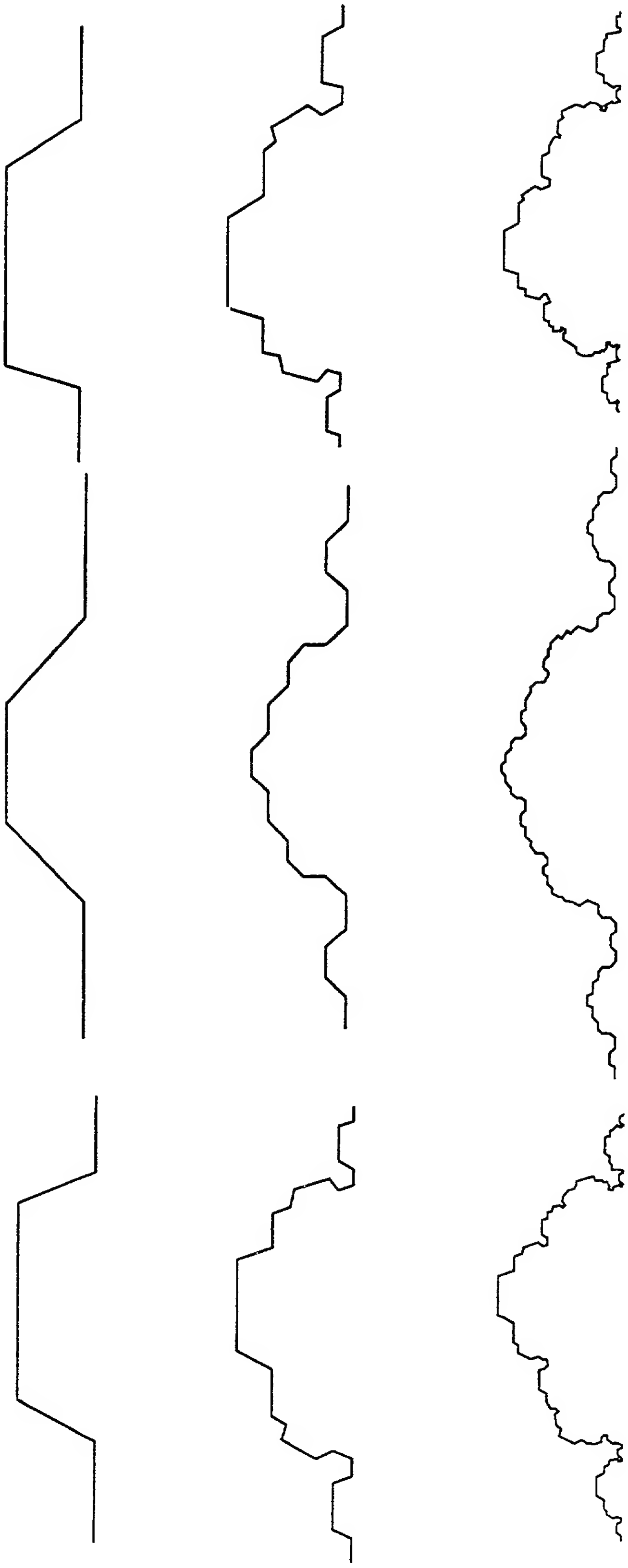


FIG.39

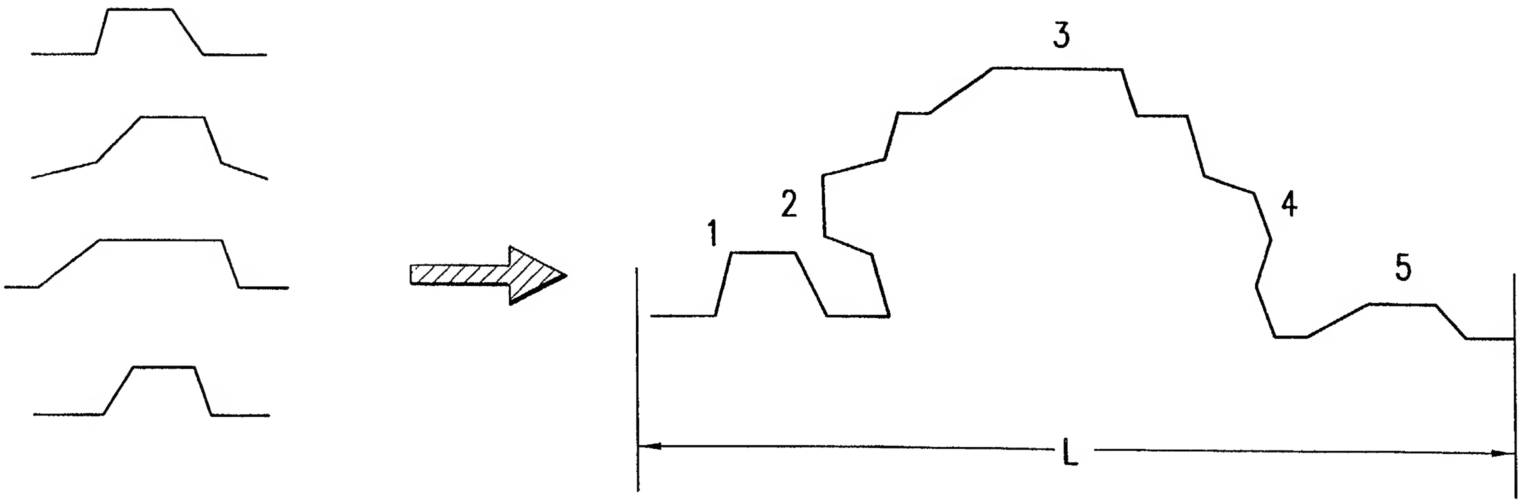


FIG.40

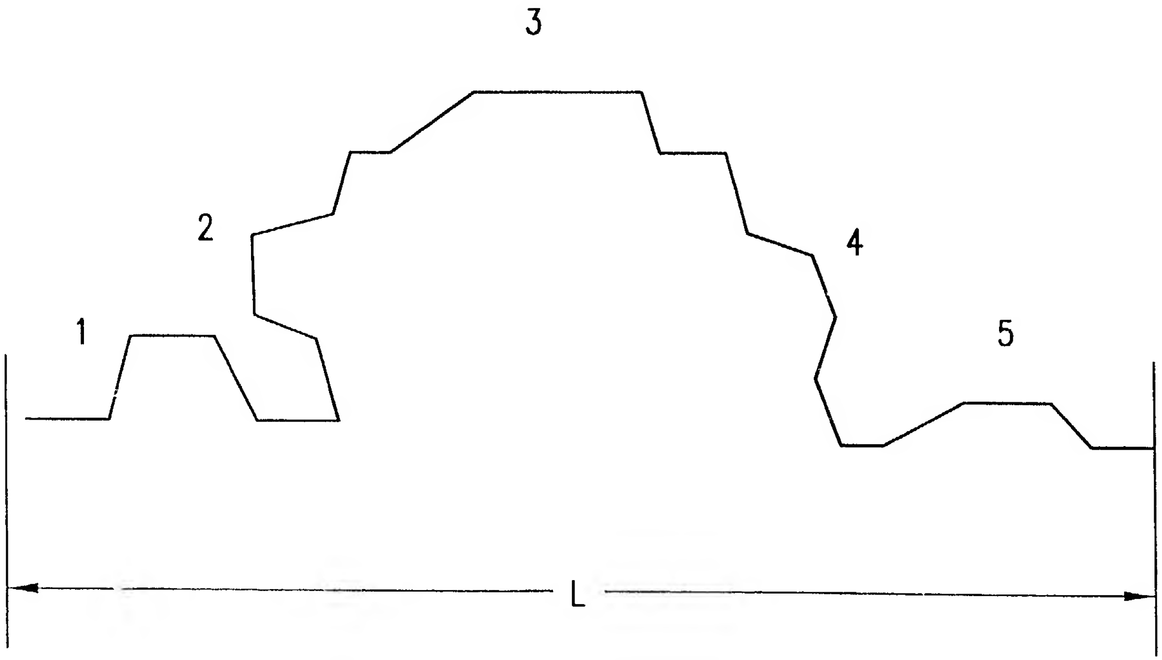


FIG.41

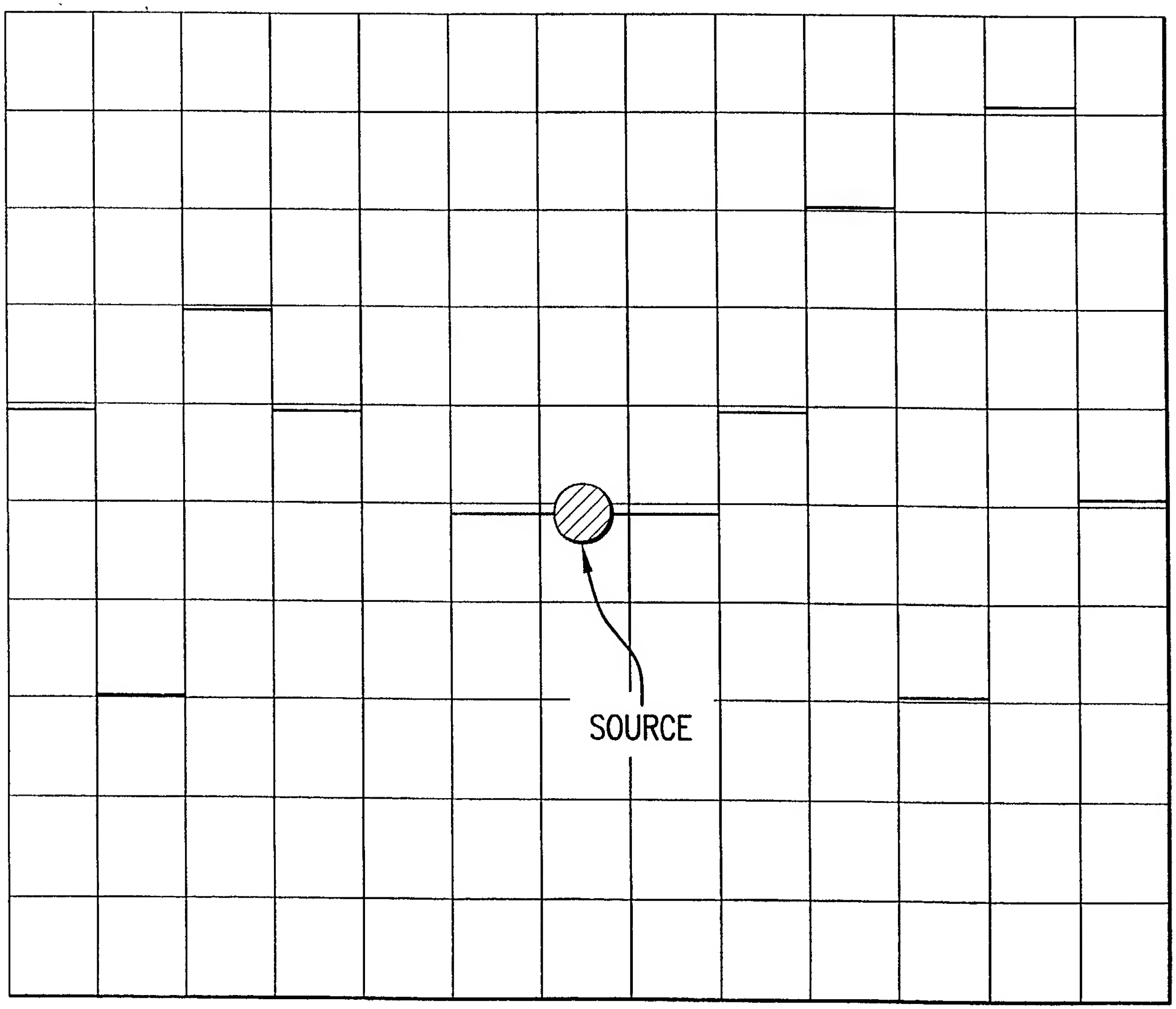


FIG.42

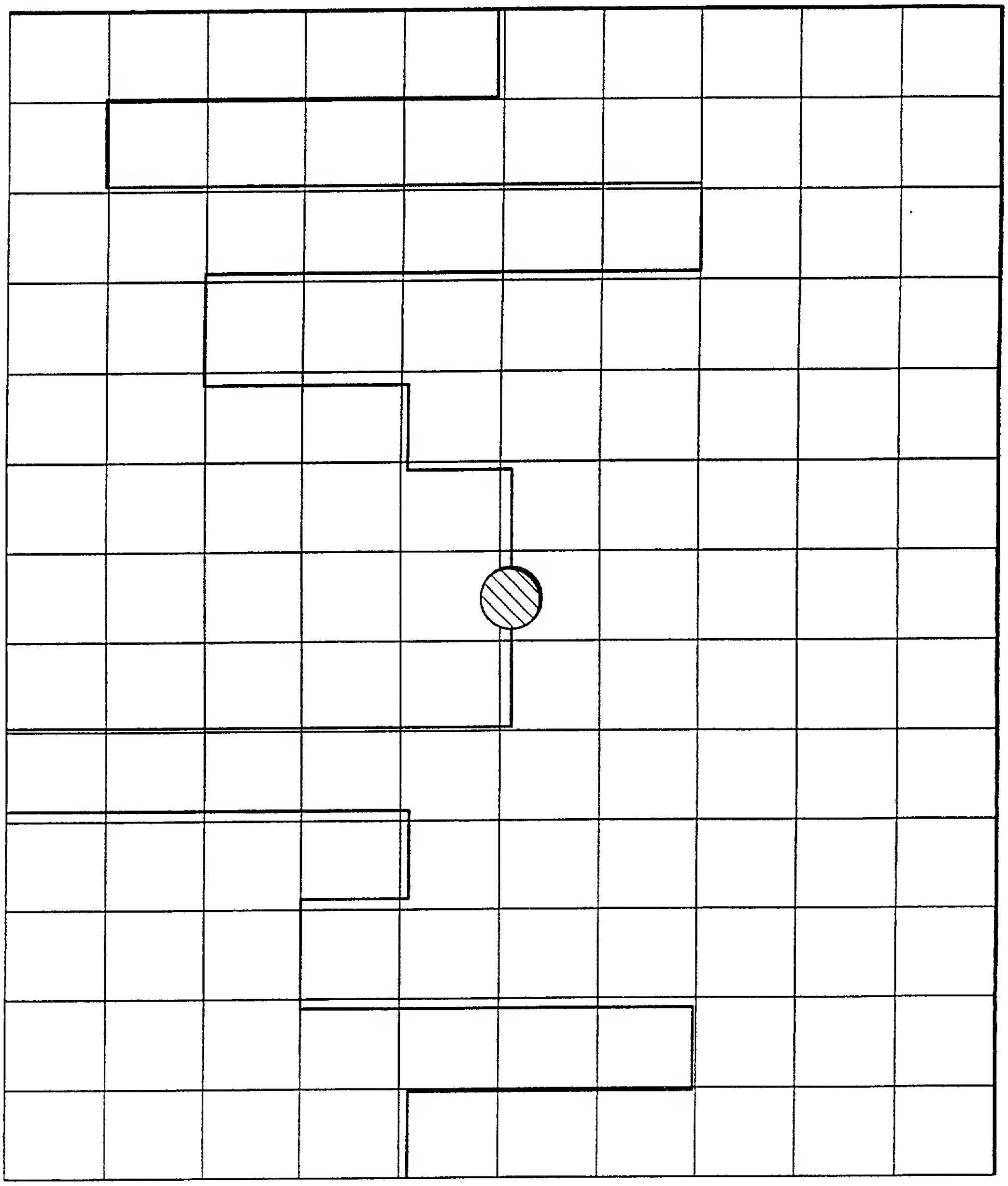
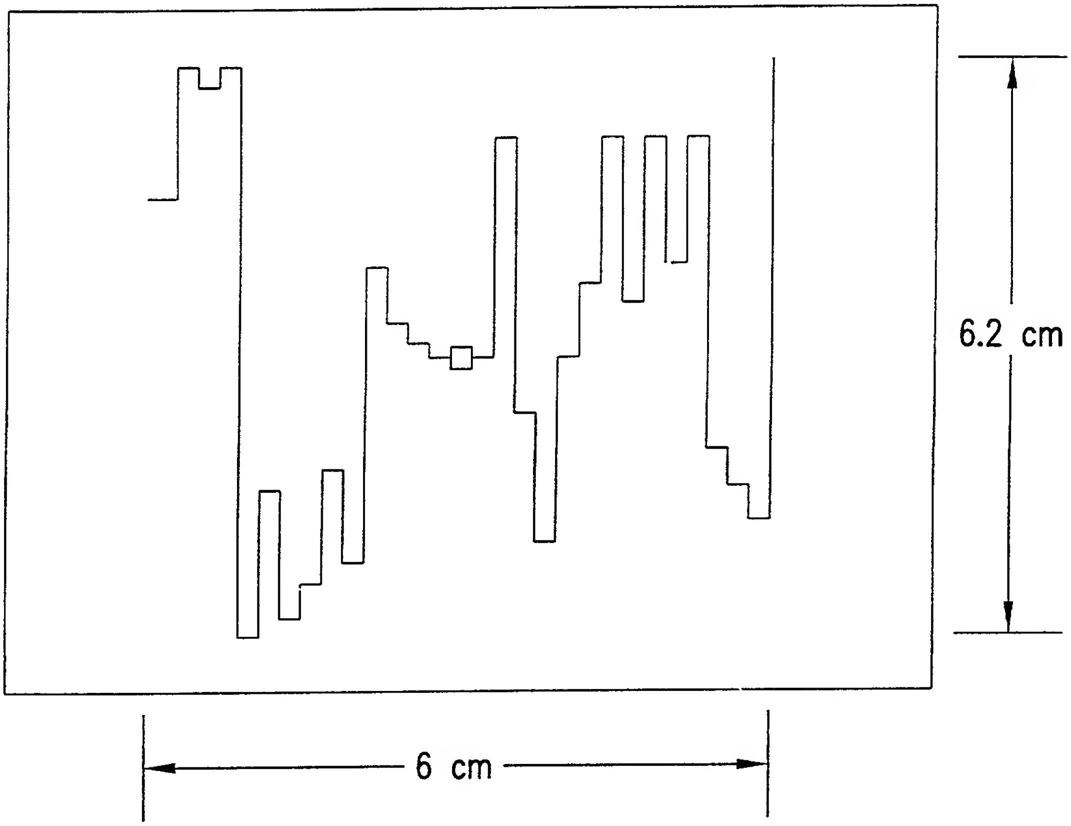


FIG.43



FREQUENCY (MHz)	VSWR	ZIN	GAIN
1225.0	1.579067	(32.47140,−6.125150)	2.030
1575.0	1.262626	(39.63660,−0.9270540)	2.610

FIG.44

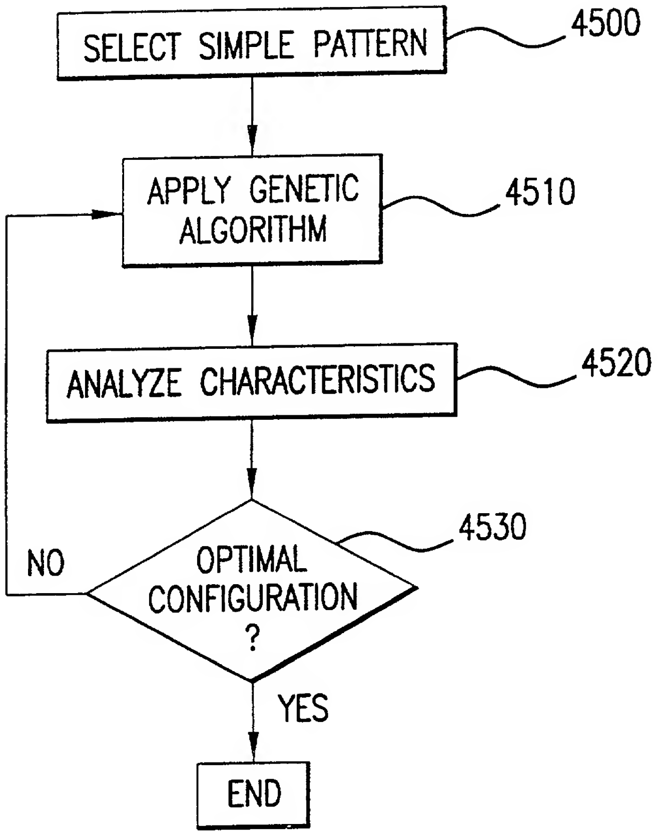

SELECT SIMPLE PATTERN
4500
APPLY GENETIC ALGORITHM
4510
ANALYZE CHARACTERISTICS
4520
OPTIMAL CONFIGURATION ?
4530
NO
YES
END

FIG.45

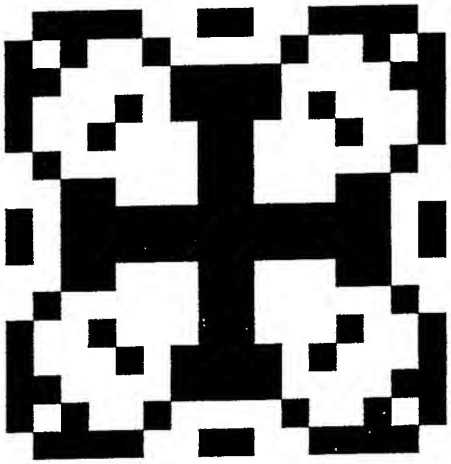


FIG.46

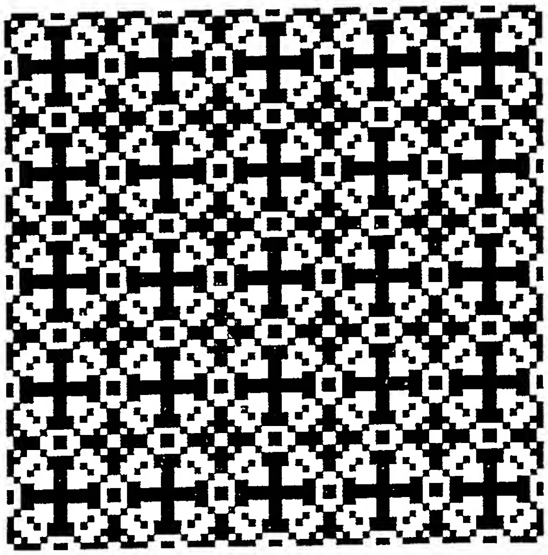


FIG.47